

DETAILED ACTION

This Office Action is in response to the entry dated 11/23/2009 and considers all proposed amendments/arguments.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 5-6, 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al (4,664,601) in view of Sakagami et al (5,961,291).
3. In re claim 1, 6, 12, 14, Uchida discloses a vacuum pump comprising:
 - A pair of pump rotors rotatably disposed in a casing (1), said pump rotors being rotatable synchronously in opposite directions;
 - Note that as shown on fig. 3 of Uchida, from T1' to T2, the rotors are rotated in a forward direction for steady state evacuation;
 - A motor (16) configured to rotate said pump rotors;
 - However, Uchida fails to disclose a pump-rotor controller for controlling rotation of said pump in accordance with a predetermined pattern when the pump is started, the predetermined pattern including a combination of at least two of rotation of said pump rotors in a forward direction, rotation of said pump rotors in a reverse direction, and stop of the rotation.
4. Nevertheless, Sakagami discloses a pump-rotor controller for controlling rotation of said pump in accordance with a predetermined pattern when the pump is started, the predetermined pattern including a combination of at least two of rotation of said pump rotors in a forward

direction, rotation of said pump rotors in a reverse direction, and stop of the rotation. Note that col 9, line 38 states, while discussing figure 1 below "the pump rotor may be turned forwardly or reversely a predetermined number of times by a small angle", step S2 could be in forward or reverse directions. This allows the rotor to scrape deposits off of the surrounding structure and thereby allowing for a more efficient pump. A problem with a vacuum type pump of Uchida could be build-up of unwanted objects. And further, Sakagami acknowledges that moving the rotor in various ways, and putting the rotor into contact with the outside rotor housing, allows one to remove the unwanted objects. However, an obvious extension of Sakagami is to not necessarily scrape the rotor, but one could simply rotate the rotor about its axis similar to what is shown in Fig 15 of Sakagami except again, just oscillate the rotor about its axis and have the rotor rotate but not move to the rotor housing. This would perform a very similar action to Sakagami except, instead of using frictional force between the rotor and the rotor housing, one could remove unwanted objects by centrifugal force (well known in the art). This would allow one to remove objects and avoid damage of the rotor against the rotor housing.

5. Therefore, it would have been obvious to modify Uchida in view of Sakagami by using the forward/backward motions of Sakagami, similarly to what is shown in Fig 15 of Sakagami, but rotate the rotor about its own axis to minimize damage to the rotor/rotor housing yet still remove unwanted objects.

6. Note that this combination also adds the necessary sensors of Sakagami to sense an abnormal condition and to run the algorithm described above to remove unwanted objects from the rotors. Note further that this combination describes rotating in a forward direction, stopping, starting in a reverse direction, stopping, etc, as shown in step S2 of Sakagami and discussed above. And examiner would like to note that this alone discloses the claimed method of rotating in order a forward direction, stopping and rotating in a forward direction (even though that there

is an intervening reverse direction in Sakagami). Finally, examiner finds that rotating in various other ways (i.e. forward, stop, forward with no reversing) would have been obvious to one having ordinary skill in the art.

7. In re claim 5, 10, 11, 13, 15, 16 Uchida/Sakagami discloses the elements described above and further comprising:

- a state-judging device (24 of Sakagami) for judging whether said pump rotor is rotated normally or not at the time of starting said vacuum pump;
- wherein when said state-judging device (24 of Sakagami) judges that said pump rotor is not rotated normally at the time of starting said vacuum pump, said pump rotor is rotated in accordance with said predetermined pattern (occurring at step S3 of Sakagami; note that Sakagami had alternative embodiments that also disclosed this for RPM instead of current detection).

Response to Arguments

8. Applicant states that the method of Sakagami does not disclose rotating forward, stopping, and rotating forward again. However, examiner disagrees because Uchida/Sakagami, as explained above, discloses rotating the rotor back and forth a number of times. This necessarily includes the steps of rotating forward, stopping, rotating backward, stopping, rotating forward. Therefore, this discloses rotating forward, stopping, rotating forward.

9. Applicant's arguments filed have been fully considered but they are not persuasive. Finally, examiner used a slightly new interpretation of Uchida in view of Sakagami that as shown above causes most of applicant's arguments to be moot.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TODD D. JACOBS whose telephone number is 571-270-5708. The examiner can normally be reached on Monday - Friday, 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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